



BEFORE THE PUBLIC UTILITIES COMMISSION OF THE STATE OF CALIFORNIA

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Order Instituting Rulemaking to Adopt
Biomethane Standards and Requirements,
Pipeline Open Access Rules, and Related
Enforcement Provisions.

Rulemaking 13-02-008
(Filed February 13, 2013)

**REPLY COMMENTS BY CALIFORNIA HYDROGEN BUSINESS COUNCIL ON
ASSIGNED COMMISSIONER'S AMENDED SCOPING MEMO AND RULING**

Emanuel Wagner
Deputy Director
California Hydrogen Business Council
18847 Via Sereno
Yorba Linda, CA 92866
310-455-6095
ewagner@californiahydrogen.org

August 31, 2018

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I. Introduction

The California Hydrogen Business Council (CHBC) welcomes the opportunity to provide reply comments on the Assigned Commissioner’s Amended Scoping Memo and Ruling for R.13-02-008. The CHBC is comprised of over 100 companies and agencies involved in the business of hydrogen. Our mission is to advance the commercialization of hydrogen in the energy sector, including transportation, goods movement, and stationary power systems to reduce emissions and dependence on oil.¹

¹ The views expressed in these comments are those of the CHBC, and do not necessarily reflect the views of all of the individual CHBC member companies. Air Liquide Advanced Technologies U.S. LLC.; Alameda-Contra Costa Transit District (AC Transit); American Honda Motor Company; Anaerobe Systems; Arriba Energy; Ballard Power Systems, Inc.; Bay Area Air Quality Management District (BAAQMD); Beijing SinoHytec; Black & Veatch; BMW of North America LLC; Cambridge LCF Group; Center for Transportation and the Environment (CTE); CNG Cylinders International; Community Environmental Services; CP Industries; DasH2energy; Eco Energy International, LLC; ElDorado National – California; Energy Independence Now (EIN); EPC - Engineering, Procurement & Construction; Ergostech Renewal Energy Solution; EWII Fuel Cells LLC; FIBA Technologies, Inc.; First Element Fuel Inc; FuelCell Energy, Inc.; GenCell; General Motors, Infrastructure Planning; Geoffrey Budd G&SB Consulting Ltd; Giner ELX; Gladstein, Neandross & Associates; Greenlight Innovation; GTA; GTM Technologies, LLC; H2B2 USA; H2Safe, LLC; H2SG Energy Pte Ltd; Hexagon Lincoln; Hitachi Zosen Inova ETOGAS GmbH; HODPros; Hydrogen Law; Hydrogenics; Hydrogenious Technologies; HydrogenXT; HyET - Hydrogen Efficiency Technologies; Hyundai Motor Company; ITM Power Inc; Ivys Inc.; Johnson Matthey Fuel Cells; KORE Infrastructure, LLC; Life Cycle Associates; Linde North America Inc; Longitude 122 West, Inc.; Loop Energy; Magnum Energy; Millennium Reign Energy; Montreux Energy; Natural Gas Fueling Solutions (NGFS); Natural Hydrogen Energy Ltd.; Nel Hydrogen; Neo-H2; Neuman & Esser USA, Inc; New Flyer of America Inc; Next Hydrogen; Noyes Law Corporation; Nuvera Fuel Cells; Pacific Gas and Electric Company - PG&E; PDC Machines; Planet Hydrogen Inc; Plug Power; Politecnico di Torino; Port of Long Beach; Powertech Labs, Inc.; Primidea Building Solutions; Proton OnSite; RG Associates; Rio Hondo College; Rix Industries; Sacramento Municipal Utility District (SMUD); SAFCell Inc; Schatz Energy Research Center (SERC); Sheldon Research and Consulting; Solar Wind Storage LLC; South Coast Air Quality Management District; Southern California Gas Company; Strategic Analysis Inc; Sumitomo Corporation of Americas; Sunline Transit Agency; T2M Global; Tatsuno North America Inc.; Terrella Energy Systems Ltd; The Leighty Foundation; TLM Petro Labor Force; Toyota Motor Sales; Trillium - A Love's Company; US Hybrid; Verde LLC; Vinjamuri Innovations LLC; WireTough Cylinders, LLC; Zero Carbon Energy Solutions.

II. Reply Comments

- 1. The majority of Parties favor revisiting hydrogen injection standards and protocols, and no opposition to this was expressed in comments; therefore, we maintain our request that this recommendation be pursued.**

The majority of Opening Comments served support revisiting hydrogen standards, with most explicitly urging that there be no delay in doing so.² Climate Resolve additionally emphasized that California utilities will need storage in the form of hydrogen, biomethane, or renewable natural gas.³ No parties expressed opposition to revisiting standards for hydrogen. Due to this strong showing of support, we believe it is appropriate for the Commission to reverse its decision to delay reviewing standards and protocols for hydrogen injection and instead to include this review in the scope of this proceeding. As previously mentioned in our comments, and as echoed in several other comments (e.g. Aquahydrex, So Cal Gas/SDG&E, PG&E), we also support opening up a parallel track with a series of technical workshops to discuss relevant issues in detail, such as protocols for and potential benefits of in-pipe blending of hydrogen that exceeds constituent limits.

- 2. Due to strong support among parties for including renewable methane derived from combining renewable hydrogen with CO2 in the discussion, and because there was no opposition to this expressed in comments, we urge the Commission to take this recommendation.**

Most comments served noted that renewable methane was not defined in the Scoping Memo and Ruling. Nearly half of all comments expressed that renewable methane either includes or ought to include methane not made using anaerobic digestion, for example, by combining renewable hydrogen (typically produced via electrolysis), with CO2 (many, including CHBC, noting this ought to come from climate neutral sources), and that standards for renewable methane defined

² Parties urging revisiting hydrogen standards were: CHBC (pp. 4, 6-14), Hydrogenics (pp. 8-9), Giner ELX (pp. 3-5), Harvest Power (pp. 6-7), ITM (pp. 2-3), Aquahydrex (pp. 4-5), Alaska Applied Sciences (pp. 2, 4-6), Planet Hydrogen (p. 3), H2 Safe (pp. 2-3), PG&E (pp. 10-11), So Cal Gas with SDG&E (pp. 6-15, 20-21), NFCRC (pp. 5-6, 7-9), Bioenergy Association of California (p. 13), Clean Energy (p. 18), CR&R (p. 10), CASA (pp. 11-12) and DTE (p. 8).

³ Climate Resolve Opening Comments, p. 5

ought to be adopted.⁴ No Parties expressed opposition. We, therefore, continue to urge the Commission to apply these recommendations in this proceeding.

Additionally, some parties opined that adopting standards for renewable methane not derived from organic waste ought not put biomethane at a competitive disadvantage. We agree and furthermore believe regulatory decisions should be careful not to create competitive disadvantages for any renewable gas, including renewable hydrogen. We believe such issues can and ought to be worked out during the discussions in this proceeding.

There are synergies between hydrogen and biomethane. For example, Harvest Power points out in their Opening Comments that “capturing the CO₂ from an anaerobic digestion process and making renewable methane from that CO₂ and hydrogen, can increase the gas production of the facility by over 80%. Such an increase improves project economics, and advances California’s climate objectives by reducing CO₂ and displacing natural gas with renewable methane.”⁵

Harvest Power also makes a recommendation that could benefit both biomethane and renewable hydrogen. They propose that the Commission “allow up to fifteen percent of gas utility cap and trade allowance revenues to be used for the development of renewable gas, including biomethane and hydrogen. Allowing the gas utilities to use fifteen percent of their cap and trade allowance revenue for the development of renewable gas will reduce short lived climate pollutants (SLCPs) emissions and provide important air quality and other benefits while reducing utility emissions, which in turn reduce Cap-and-Trade compliance costs for ratepayers.”⁶ We support this recommendation.

3. Renewable hydrogen solutions can reduce SLCPs.

Statements by Bioenergy Association of California, Clean Energy, CalBio and CR&R that claim only biomethane can reduce upstream emissions of SLCPs are incorrect.⁷ While it is true that

⁴ Parties included CHBC (pp. 4-6), Hydrogenics (p. 9), Harvest Power (pp. 4-5), Planet Hydrogen, H2 Safe (p. 3), NFCRC (p. 5-6), PG&E (p. 8) – Note that renewable hydrogen combined with CO₂ fits into PG&E’s definition of “renewable methane” as being derived from “thermochemical, biochemical, electrochemical, or processes other than anaerobic digestion, that are used to produce methane for the purpose of injection into the gas utility pipeline system.”), So Cal Gas with SDG&E (p. 6), Bioenergy Association of California (p. 8), CR&R (p. 6), and Clean Energy (p. 13). Giner ELX (p. 4) and Aquahydrex (pp. 7, 12).

⁵ See Harvest Power Opening Comments, p. 4.

⁶ See Harvest Power Opening Comments p. 6

⁷ See Bioenergy Association of California Opening Comments, p. 8; Clean Energy Comments p. 13; CR&R p.

biomethane can mitigate most large sources of upstream methane emissions, as well as black carbon from transportation, and we fully support strategies that enable this, it is not true that biomethane is the only pathway, and policies ought to facilitate the full suite of solutions.

Another pathway is to deploy renewable hydrogen-based solutions. Renewable hydrogen can be produced either from reforming biomethane or electrolysis powered by renewable electricity, and emits zero greenhouse gases or SLCPs over its lifecycle. Renewable hydrogen can be used purely, for example, as a zero emissions transportation fuel for passenger, medium, and heavy duty fuel cell vehicles, which can help eliminate oil and gas extraction (4% of state methane emissions)⁸ and black carbon from transportation. Renewable hydrogen can also displace methane in the pipeline system (9% of the state's methane emissions)⁹ and natural gas in industrial processes, as well as displace methane for electrical generation either via fuel cells or gas turbines.¹⁰ Renewable hydrogen can also be combined with CO₂ from climate neutral sources to make renewable methane, which can be used in the same ways as biomethane.

An advantage of electrolytic renewable hydrogen and its renewable methane derivative over biomethane is that it can be produced at vast volume and then be stored at the terawatt hour scale in a flexible combination of natural caverns, the gas system, and designated tanks, for a variety of uses. This is possible because it relies only on scalable, highly flexible renewable electricity and small amounts of water. CO₂ can be harvested from many sources, including biogas, directly from the atmosphere, or industrial plants like breweries. Biomethane, on the other hand, relies on a relatively limited amount of organic waste feedstock.

We strongly support policies that enable a broad set of solutions to reduce SLCPs, as called for in SB 1383, which explicitly requires “state agencies to consider and, as appropriate, adopt policies and incentives to significantly increase the sustainable production and use of renewable gas” and not only biomethane.¹¹ Underscoring that the intent of the law extends beyond support for biomethane as a solution for mitigating SLCPs, the California Energy Commission IEPR also

⁸ Source: CARB <https://www.arb.ca.gov/cc/inventory/slep/slep.htm>

⁹ *ibid*

¹⁰ Mitsubishi has developed a gas turbine that can use up to 30% hydrogen blends with no increase in NO_x emissions, and has announced it will soon release a turbine that can use 100% hydrogen.

https://www.mhps.com/special/hydrogen/article_1/index.html

¹¹ https://leginfo.ca.gov/faces/billNavClient.xhtml?bill_id=201520160SB1383

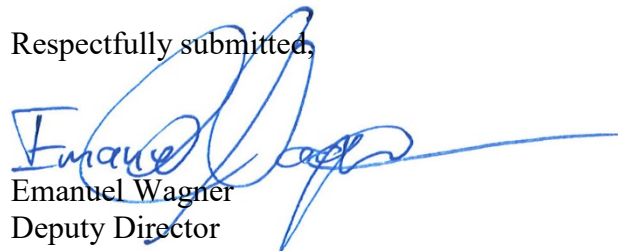
specifically calls for electrolytic hydrogen made from renewable electricity and renewable methane derived from this process be included in California's strategy to mitigate SLCPs.¹²

III. Conclusion

The CHBC appreciates this opportunity to submit reply comments and we look forward to working further with Commission to address the issues raised in this proceeding.

Respectfully submitted,

Dated: August 31, 2018



Emanuel Wagner
Deputy Director
California Hydrogen Business Council

¹² See 2017 IEPR pp. 285-286. Note the IEPR uses the term “power to gas,” which is hydrogen produced via electrolysis using grid electricity or dedicated renewable generation, or this hydrogen synthesized into methane.